

## **APPENDIX E**

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### **SUPPLEMENTAL TRAFFIC ANALYSIS REPORT**

***PREPARED BY:***  
**HEXAGON TRANSPORTATION CONSULTANTS, INC.**

**JULY 2007**



## HEXAGON TRANSPORTATION CONSULTANTS, INC.

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### MEMORANDUM

TO: Karen Mack, City of San Jose  
Cc: Rochelle Lopez, Sand Hill Property Company

FROM: Robert Del Rio

DATE: November 20, 2007

SUBJECT: Ridder Park Retail Supplemental Traffic Analysis

### Introduction

Hexagon Transportation Consultants, Inc. has completed a supplemental traffic analysis for the proposed development of the 18.1-acre Ridder Park site in North San Jose. The project as proposed will consist of a total of approximately 200,000 square feet (s.f.) of retail space which would include a Lowe's Home Improvement Store. The site is bounded by I-880, Brokaw Road and Ridder Park Drive (see Figure 1). Though the project site is located within the North San Jose Development Policy (NSJDP) boundary, it would not be covered by the completed and approved NSJDP Environmental Impact Report (EIR) because the proposed project is not consistent with the planned industrial uses for the site identified in the EIR, nor does it meet the definition of ancillary retail uses as prescribed by the NSJDP. As such, the project is required to prepare a supplemental traffic impact analysis report. The supplemental traffic analysis that will be prepared for the proposed development will be included as part of an Initial Study/Addendum to the NSJDP.

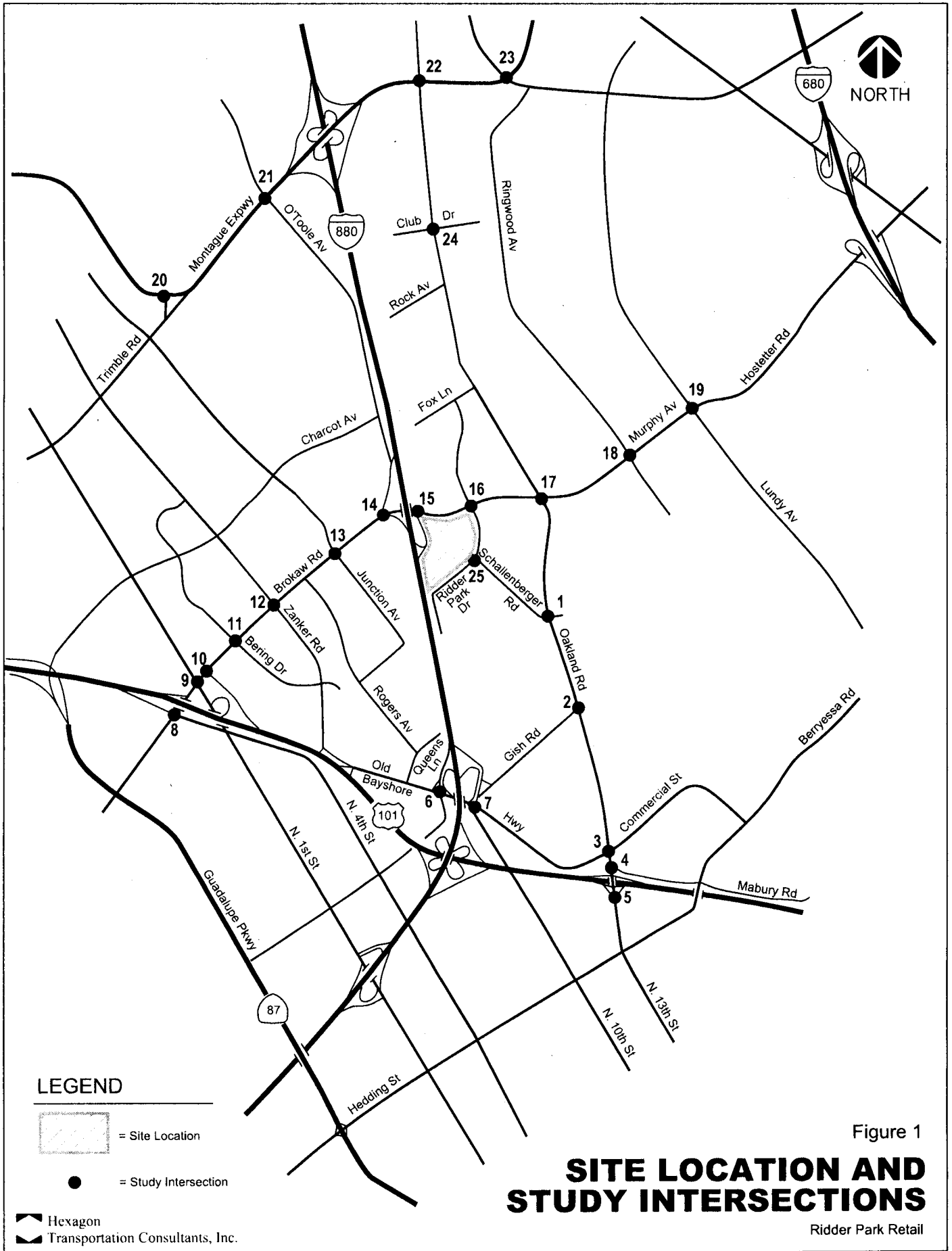
### Scope of Study

The purpose of the supplemental traffic analysis is to determine whether the project would have any impacts beyond those identified as part of the completed and approved NSJDP EIR. The analysis was completed according to the requirements of the City of San Jose and the Congestion Management Program (CMP) of the Santa Clara Valley Transportation Authority (VTA). The study focuses on traffic impacts of the proposed development on the key intersections and freeways segments in the vicinity of the project site as identified in Figure 1.

The analysis is based on the adjustment of the land uses assumed for the project site as part of the NSJDP EIR to reflect the proposed project. An operations analysis consisting of signal warrant checks and vehicle queue analysis at selected intersections and an evaluation of site access and on-site circulation, was also included. Traffic conditions were evaluated for the following scenarios:

**Existing Conditions.** Existing conditions were represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from the City of San Jose.

**NSJDP Buildout Conditions.** NSJDP buildout conditions were represented by NSJDP buildout traffic volumes with identified roadway improvements. NSJDP buildout conditions reflect the approved land uses of the NSJDP EIR. NSJDP traffic volumes were obtained directly from the NSJDP EIR.





**NSJDP Buildout Conditions with Project.** To evaluate the effects of the proposed project on the already completed NSJDP EIR, buildout traffic volumes from the NSJDP EIR were adjusted to account for the proposed land use change of the project site. Traffic estimated to be generated by the planned industrial uses assumed for the site in the NSJDP EIR will be removed from the NSJDP buildout volumes and replaced by the proposed project generated traffic. NSJDP buildout conditions with project were evaluated relative to NSJDP buildout conditions in order to determine potential project impacts.

## Existing and NSJDP Buildout Conditions Traffic Volumes

Existing and NSJDP buildout conditions traffic volumes were obtained from the NSJDP EIR. No adjustments were made to the NSJDP buildout conditions volumes shown in Figure 2.

## Trip Generation, Distribution, and Assignment

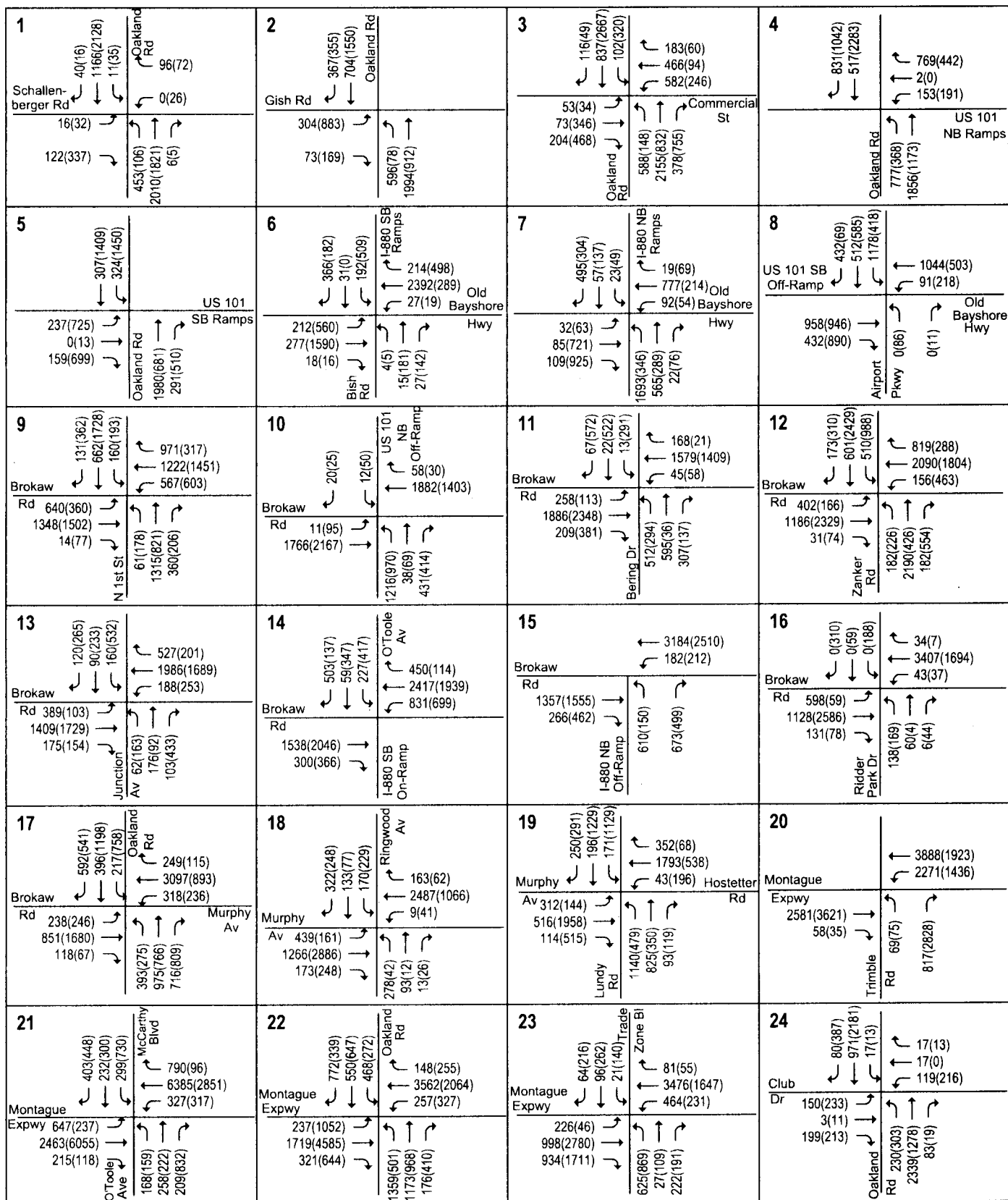
### *Trip Generation*

The magnitude of traffic generated by the proposed project was estimated by applying to the size of the development the applicable trip generation rates recommended by the City of San Jose *Interim Guidelines for Traffic Impact Analysis of Land Developments*, June 1994 and *Brief Guide of Vehicular Trip Generation Rates for the San Diego Region*, SanDAG, April 2002. SanDAG rates were used for the proposed Lowe's Home Improvement Store component of the project based on surveys of other Lowe's stores in the area. The surveys showed that the SanDAG rates are more reflective of trip making characteristics for Lowe's stores and were also used for the proposed south San Jose site. Based on the recommended rates, it is estimated that the proposed project would generate 10,859 daily trips with 502 AM peak-hour trips (301 inbound trips and 201 outbound trips) and 798 PM peak-hour trips (399 inbound trips and 399 outbound trips).

The site is approved for 265,000 s.f. of research and development (R&D) space. Based on the City of San Jose rates, the approved R&D uses of the site would generate 2,120 daily trips, with 339 occurring during the AM peak hour and 297 occurring during the PM peak hour.

Traffic generated by the approved R&D uses on the site was subtracted from the aforementioned gross project trips (trips estimated to be generated solely by the proposed project) to calculate the additional traffic that would be generated by the proposed project, or the net project trips. This procedure indicates that the proposed project would generate more traffic than the approved R&D uses of the site during both the AM and PM peak hours. The proposed retail uses would result in a net increase of 8,739 daily trips with 163 AM peak-hour trips (30 inbound trips and 133 outbound trips) and 501 PM peak-hour trips (369 inbound trips and 132 outbound trips).

As part of the North San Jose Deficiency Plan EIR, it was assumed that the project site would consist of industrial/R&D uses. The proposed project would convert the assumed industrial uses to retail use. Based on the site size (18.1 acres) and a 0.35 FAR of development for R&D uses, a total of 275,953 s.f. of R&D space was assumed as part of the NSJDP for the site. Traffic estimated to be generated by the planned R&D uses was removed from the NSJDP buildout volumes and replaced by the proposed project generated traffic. The project trip generation estimates are presented in Table 1.



### Legend

XX(XX) = AM(PM) Peak-Hour Traffic Volumes



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## NSJDP BUILDOUT CONDITIONS TRAFFIC VOLUMES

Ridder Park Retail

Figure 2

Table 1

## Trip Generation Estimates for Ridder Park Retail

Land Use	Size	Daily Rate/a/	Daily Trips/a/	AM Peak Hour			PM Peak Hour						
				Pk-Hr Rate	In	Out	Total	Pk-Hr Rate	Pass-By Red./d/	In	Out	Total	
Approved Land Use													
R&D	265,000 s.f.	8.0	2,120	0.16	271	68	339	0.14		30	267	297	
Proposed Land Use													
Neighborhood Shopping Retail/b/	34,000 s.f.	120.0	4,080	0.04	98	65	163	0.11	25%	168	168	337	
Regional Serving Retail/c/	169,486 s.f.	40.0	6,779	2.00	203	136	339	3.2	15%	231	231	461	
	Sub-Total 203,486 s.f.		10,859		301	201	502			399	399	798	
Net Difference between Approved and Proposed Land Uses													
			8,739		30	133	163			369	132	501	
NSJ Approved Land Use													
R&D /e/	275,953 s.f.	8.0	2,208	0.16	283	71	353	0.14		31	278	309	
Net Difference between Proposed and Planned Land Uses													
			8,652		-253	62	-190			338	-146	192	

/a/ Trips expressed in trips per 1,000 s.f. of retail/R&amp;D space.

/b/ Rates based on City of San Jose, *Common Vehicular Trip Generation rates for the San Jose Area*, March 1994/c/ Rates based on *Breif Guide of Vehicular Traffic Generation Rates for the San Diego Region*, SanDAG, April 2002.

/d/ Pass-by trip reductions of 25% was applied to Neighborhood Shopping and 15% to Proposed Regional Serving retail uses during the PM peak hour

/e/ Assumes 18.1 acre parcel developed at 0.35 FAR.



### ***Trip Distribution and Assignment***

The directional distribution of site-generated traffic to and from the main gateways to the project area shown in Figure 3 was developed based on existing traffic volumes and the location of complimentary land uses.

The peak-hour trips generated by the approved, proposed, and NSJDP assumed land uses for the project site were assigned to the roadway system in accordance with the trip distribution pattern. The removed R&D trips associated with the NSJDP assumed uses for the site were reassigned to areas west of I-880. Project trips were assigned to intersections surrounding the site based on the assumption that access to the site will be provided from Oakland Road and Brokaw Road. Figures 4-7 present trip assignments for each component of trips. Figure 8 presents final adjusted NSJDP buildout condition volumes with the proposed project.

### **Impact Criteria**

Significance criteria are used to establish what constitutes an impact. For this analysis, the criteria used to determine impacts on intersections is based on a comparison of NSJDP buildout conditions with the proposed project land use adjustments to NSJDP buildout conditions of the already approved NSJDP EIR. The evaluation follows City of San Jose and Congestion Management Program (CMP) Level of Service standards.

#### ***Intersection Impact Criteria***

##### **City of San Jose Definition of Significant Intersection Impacts**

The project is said to create a significant adverse impact on traffic conditions at a signalized intersection in the City of San Jose if for either peak hour:

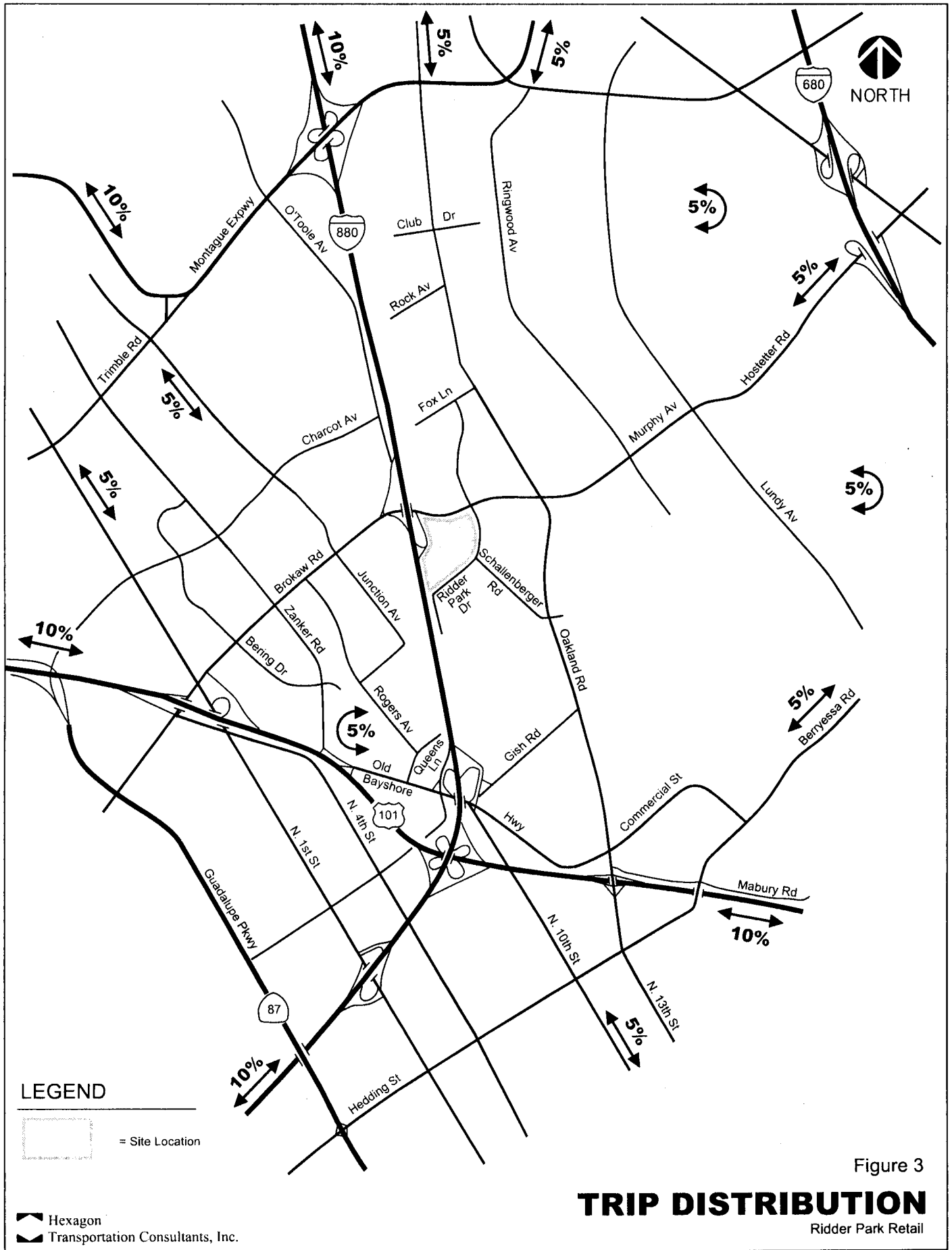
1. The level of service at the intersection degrades from an acceptable LOS D or better under NSJDP buildout conditions to an unacceptable LOS E or F under NSJDP buildout with project conditions, or
2. The level of service at the intersection is an unacceptable LOS E or F under NSJDP buildout conditions and the addition of project trips causes both the critical-movement delay at the intersection to increase by four or more seconds *and* the demand-to-capacity ratio (V/C) to increase by .01 or more.

An exception to this rule applies when the addition of project traffic reduces the amount of average stopped delay for critical movements (i.e. the change in average stopped delay for critical movements is negative). In this case, the threshold of significance is an increase in the critical V/C value by .01 or more.

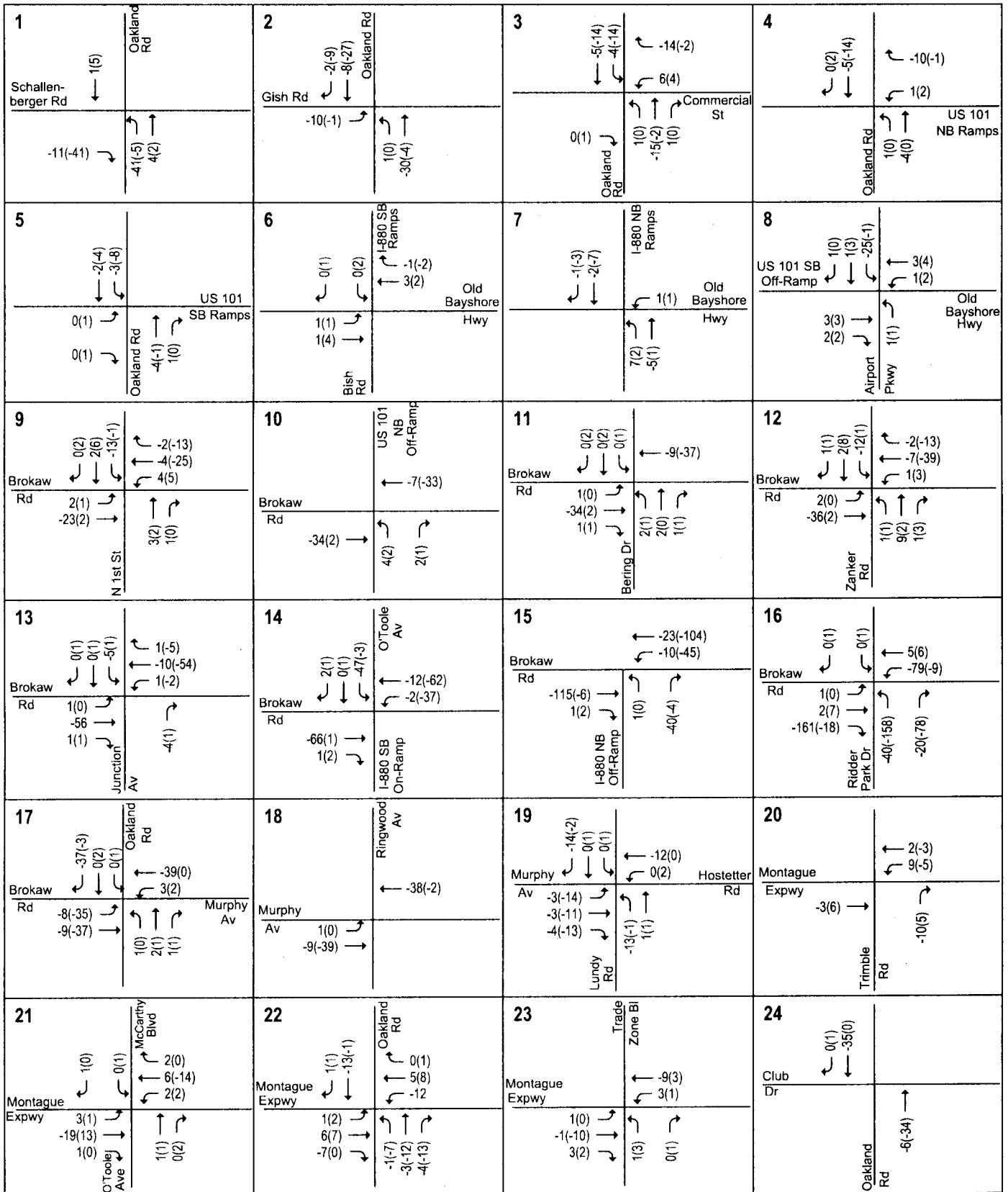
A significant impact by municipal standards is said to be satisfactorily mitigated when measures are implemented that would restore intersection level of service to NSJDP buildout conditions or better.

##### **CMP Definition of Significant Intersection Impacts**

The definition of a significant impact at a CMP intersection is the same as for the City of San Jose criteria, except that the CMP standard for acceptable level of service at a CMP intersection is LOS E or better. The City of San Jose requires that CMP intersections located within their jurisdictions also meet their specific criteria, which are more stringent.







# Legend

XX(XX) = AM(PM) Peak-Hour Traffic Volumes



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Figure 4

## NORTH SAN JOSE SITE PLANNED AND RELOCATED R&D TRIPS

Ridder Park Retail

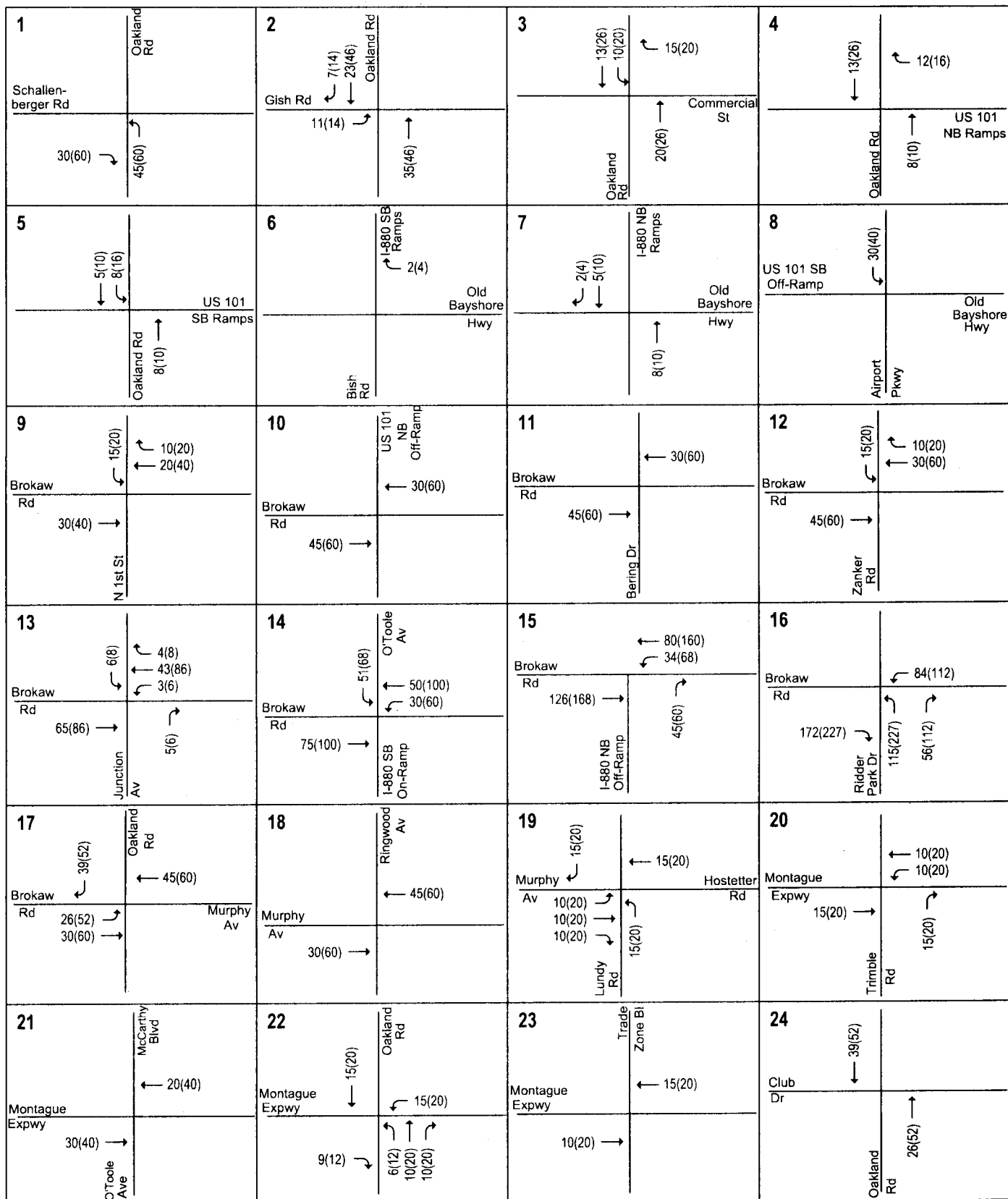
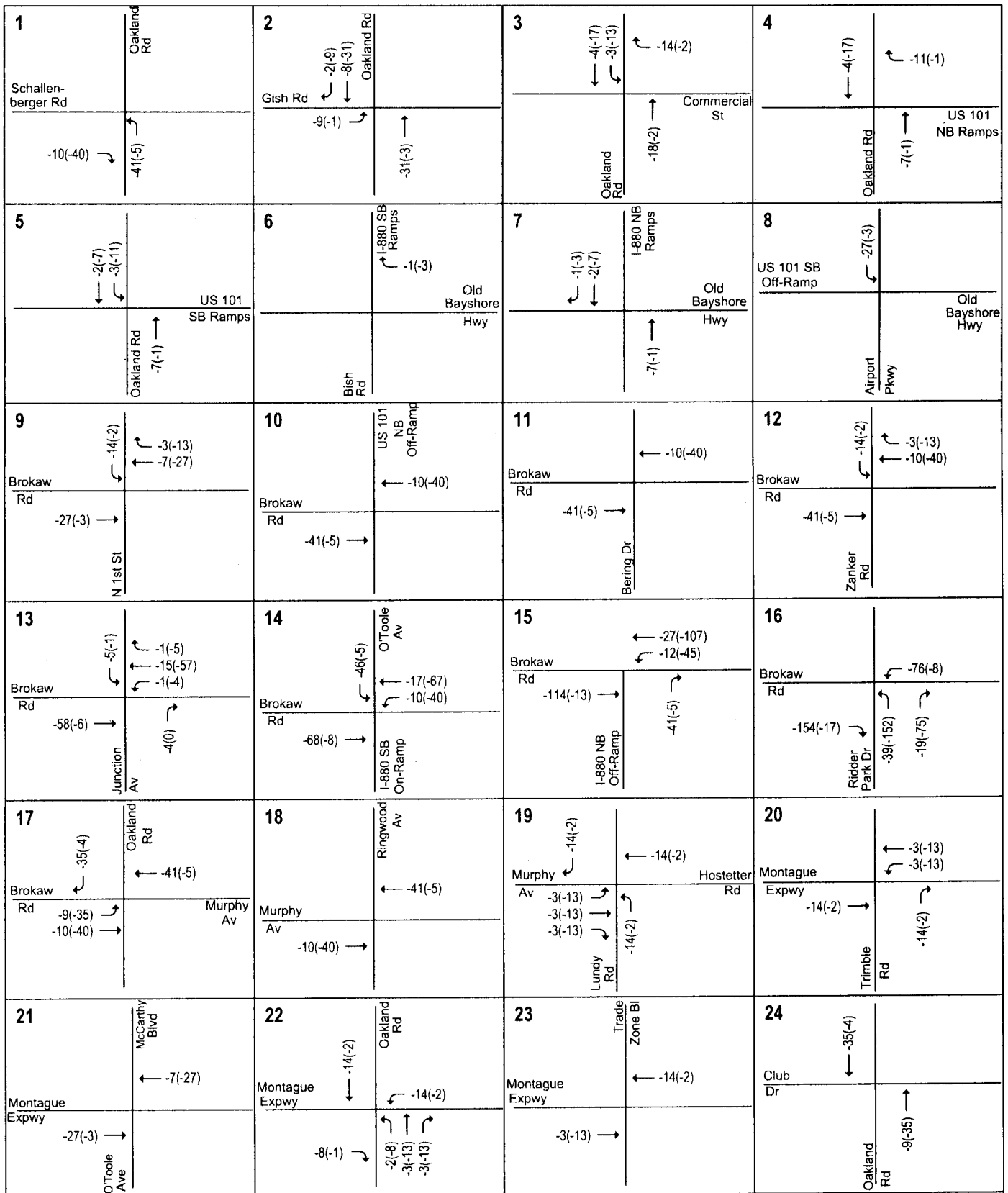


Figure 5

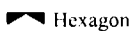
## PROJECT RETAIL TRIPS

Ridder Park Retail



### Legend

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

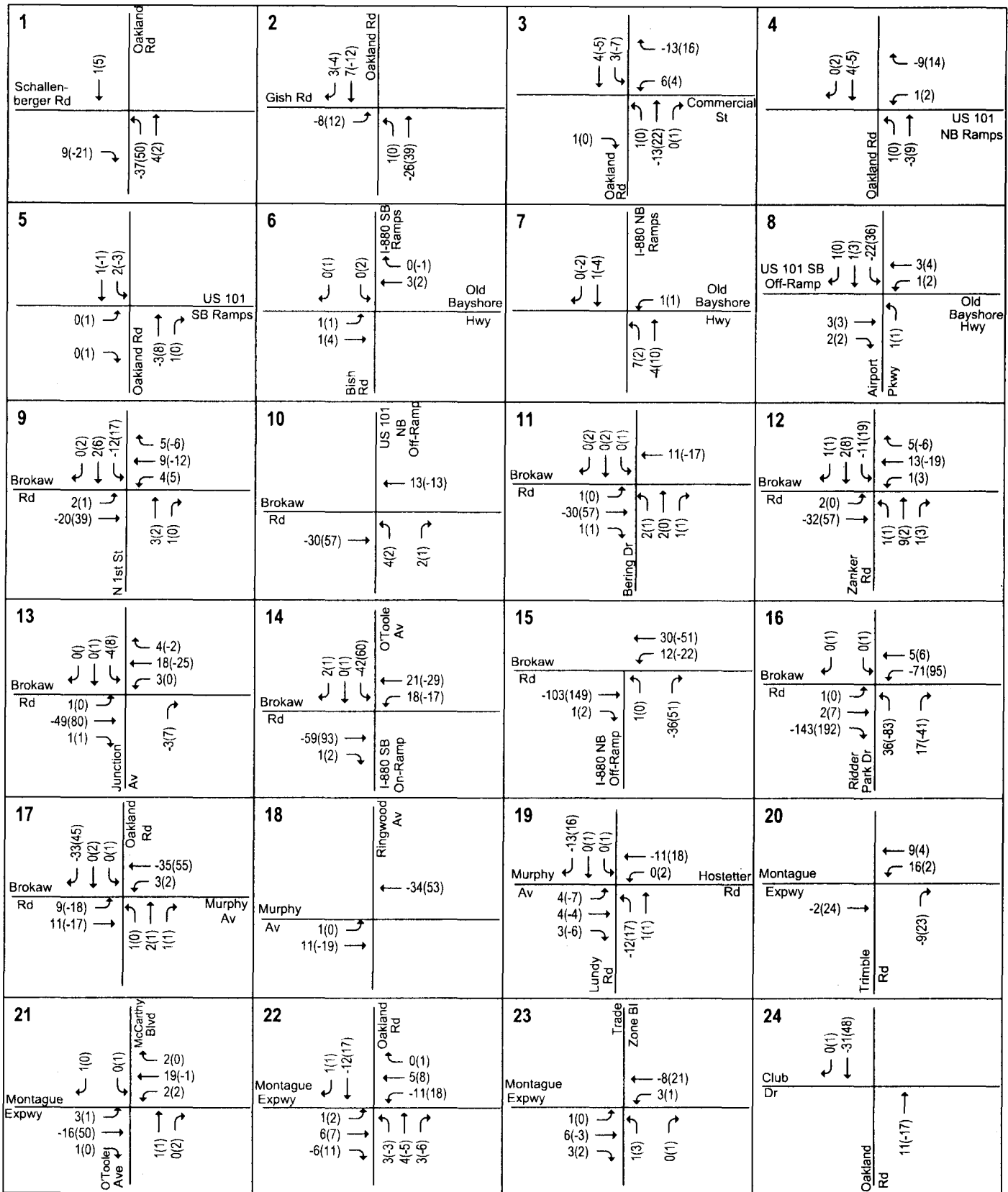


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Figure 6

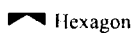
**APPROVED TRIPS**

Ridder Park Retail



### Legend

XX(X) = AM(PM) Peak-Hour Traffic Volumes

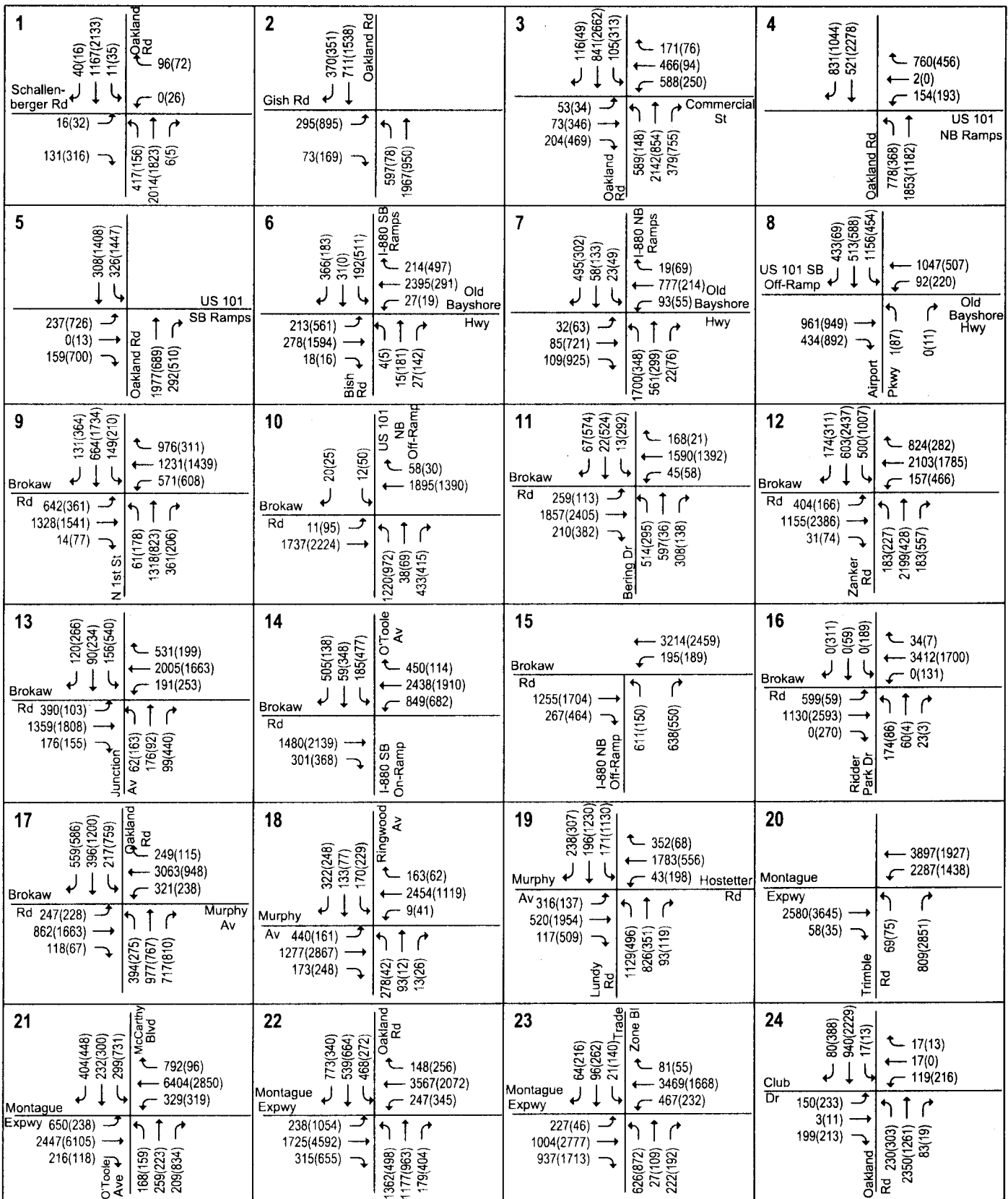


Transportation Consultants, Inc.

Figure 7

## NET PROJECT TRIPS

Ridder Park Retail



### Legend

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

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Figure 8

## PROJECT CONDITIONS TRAFFIC VOLUMES

Ridder Park Retail



### ***Freeway Segment Impact Criteria***

According to the CMP, a development is said to create a significant adverse impact on traffic conditions on a CMP freeway segment if for either peak hour:

1. The level of service on the freeway segment degrades from an acceptable LOS E or better under existing conditions to an unacceptable LOS F under project conditions or,
2. The level of service on the freeway segment is an unacceptable LOS F under project conditions, and the number of project trips on that segment constitutes at least one percent of capacity on that segment.

A significant impact by CMP standards is said to be satisfactorily mitigated when measures are implemented that would restore freeway conditions to LOS E or better.

### **Analysis Results**

Intersection and freeway analysis consists of a comparison of intersection and freeway segment levels of service for buildout conditions of the NSJDP EIR with the adjusted NSJDP buildout with project conditions to determine the effects of the proposed land use change.

#### ***Intersection Level of Service Analysis***

Results of the intersection level of service analysis for project conditions show that no intersections beyond those identified as part of the NSJDP EIR would be impacted by the planned industrial uses assumed as part of the NSJDP project are replaced by the proposed project land uses (see Table 2).

#### ***Freeway Impacts***

An analysis of the proposed project on freeway segments serving the project area show that the project would add more than one percent of capacity to one freeway segment (I-880, southbound between Montague Expressway and Brokaw Road) operating at LOS F (See Table 3). The NSJDP EIR identified this same freeway segment to be impacted and is, therefore, covered by mitigation provided by the NSJDP EIR.

#### ***NSJDP Impact Fees***

The NSJDP has established a traffic fee program to construct necessary improvements in North San Jose. Fees have been identified for residential (per unit) and industrial (per s.f.), but no fees are currently identified for retail uses. Since the proposed regional serving retail uses of the project are not consistent with those identified as part of the NSJDP, it can be expected that a fee would be collected for this project regardless of it not causing additional intersection and freeway impacts.

The fees are based on the North San Jose Area Development Policy NSJADP, dated and adopted in June 2005. Credit for the payment of fees is applied since the project will consist of the replacement of existing industrial entitlement. The estimated cost below is based on the fees outlined in Table 1 of the NSJADP .

Estimated NSJDP Impact Fee Calculation:

Credit for Approved Land Use -- 265,000 s.f. Industrial Space (\$11.14 per s.f.) = \$2,952,100  
Proposed Regional Retail Space -- 461 PM Peak Hour Trips (\$9,952 per trip) = \$4,587,872  
**Net Total = \$1,635,772**

**Table 2**  
**Intersection Levels of Service Summary**

Study Number		Peak Hour	Count Date	Existing			NSJ Buildout w/Improvements			NSJ Buildout With Project & Improvements				
				Ave.		LOS	Ave.		LOS	Ave.	Delay	LOS	Incr. In	
				Delay	LOS		Delay	LOS					Crit. Delay	Crit. V/C
1	Oakland Road and Schallenger Road	AM	11/17/04	11	B	B	17	B	B	16	B	B	0.0	0.001
		PM	11/16/04	11	B	B	16	B	B	17	B	B	3.3	0.035
2	Oakland Road and Gish Road	AM	11/18/04	14	B	B	19	B	B	19	B	B	-0.2	-0.003
		PM	11/17/04	14	B	B	67	E	E	68	E	E	1.9	0.004
3	Oakland Road and Commercial Street	AM	11/16/05	38	D	D	90	F	F	90	F	F	0.4	0.002
		PM	11/16/05	43	D	D	57	E	E	56	E	E	-1.1	-0.007
4	Oakland Road and US 101 (N)*	AM	10/5/05	56	E	E	48	D	D	47	D	D	-0.9	-0.003
		PM	10/21/04	23	C	C	23	C	C	23	C	C	1.6	0.006
5	Oakland Road and US 101 (S)*	AM	10/27/04	27	C	C	20	C	C	20	C	C	0.1	0.000
		PM	10/27/04	26	C	C	94	F	F	93	F	F	-0.2	-0.001
6	I-880 and Old Bayshore Highway (W)	AM	10/9/02	28	C	C	56	E	E	56	E	E	0.4	0.001
		PM	10/9/02	32	C	C	55	E	E	55	E	E	0.3	0.002
7	I-880 and Old Bayshore Highway (E)	AM	2/15/05	33	C	C	130	F	F	129	F	F	-1.3	-0.003
		PM	2/15/05	21	C	C	22	C	C	22	C	C	0.0	-0.001
8	US 101 Southbound off-ramp and Airport Parkway	AM	3/31/05	29	C	C	32	C	C	30	C	C	-0.8	-0.047
		PM	3/31/05	31	C	C	41	D	D	42	D	D	1.2	0.009
9	North First Street and Brokaw Road*	AM	11/9/05	40	D	D	90	F	F	90	F	F	1.9	0.005
		PM	10/26/05	42	D	D	96	F	F	98	F	F	-0.4	-0.001
10	US 101 and Brokaw Road*	AM	9/29/04	23	C	C	41	D	D	41	D	D	0.7	0.004
		PM	9/29/04	24	C	C	38	D	D	38	D	D	0.4	0.012
11	Bering Drive and Brokaw Road	AM	3/14/01	19	B	B	43	D	D	43	D	D	0.3	0.004
		PM	3/13/01	29	C	C	44	D	D	44	D	D	1.1	0.013
12	Zanker Road and Brokaw Road*	AM	11/9/05	37	D	D	96	F	F	97	F	F	0.4	0.001
		PM	10/27/05	48	D	D	105	F	F	110	F	F	5.4	0.014
13	Junction Avenue and Brokaw Road	AM	3/23/04	24	C	C	32	C	C	32	C	C	0.0	0.004
		PM	3/23/04	29	C	C	32	C	C	32	C	C	0.8	0.020
14	I-880 and Brokaw Road (W)*	AM	10/14/04	46	D	D	47	D	D	47	D	D	0.0	-0.004
		PM	10/14/04	37	D	D	33	C	C	34	C	C	1.5	0.025
15	I-880 and Brokaw Road (E)*	AM	10/14/04	31	C	C	35	D	D	33	C	C	-3.7	-0.024
		PM	10/14/04	19	B	B	20	B	B	23	C	C	3.7	0.036
16	Ridder Park Drive and Brokaw Road	AM	3/23/04	18	B	B	37	D	D	42	D	D	6.1	0.024
		PM	3/23/04	15	B	B	19	B	B	21	C	C	5.4	0.061

**Table 2**  
**Intersection Levels of Service Summary**

Study Number		Peak Hour	Count Date	Existing			NSJ Buildout w/Improvements			NSJ Buildout With Project & Improvements				
				Ave. Delay	LOS		Ave. Delay	LOS		Ave. Delay	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	
17	Oakland Road and Brokaw Road*	AM	11/1/05	40	D		81	F		78	E	-19.0	-0.015	
		PM	10/27/05	41	D		74	E		73	E	-0.8	-0.002	
18	Ringwood Avenue and Murphy Avenue	AM	3/23/04	24	C		43	D		43	D	-0.3	-0.004	
		PM	3/23/04	21	C		22	C		22	C	0.0	-0.003	
19	Lundy Avenue and Murphy Avenue*	AM	10/13/04	39	D		52	D		51	D	-0.4	-0.004	
		PM	10/13/04	37	D		59	E		59	E	1.4	0.006	
20	Trimble Road and Montague Expressway*	AM	00/00/04	26	C		25	C		24	C	-0.1	-0.001	
		PM	10/30/04	50	D		80	F		82	F	2.2	0.007	
21	O'Toole Avenue and Montague Expressway*	AM	00/00/04	35	D		35	C		35	C	0.1	0.002	
		PM	10/6/05	84	F		57	E		58	E	1.9	0.005	
22	Oakland Road and Montague Expressway*	AM	00/00/04	81	F		174	F		174	F	1.1	0.002	
		PM	10/6/05	87	F		114	F		116	F	2.5	0.006	
23	Trade Zone Boulevard and Montague Expressway*	AM	10/5/05	39	D		53	D		53	D	0.1	0.000	
		PM	9/23/04	89	F		71	E		71	E	0.4	0.002	
24	Oakland Road and Calle Artis	AM	3/5/02	13	B		23	C		21	C	-3.2	-0.012	
		PM	3/5/02	13	B		33	C		36	D	4.7	0.019	

\* Denotes CMP Intersection



Table 3  
Freeway Segment Level of Service

Existing Plus Project Trips																				
Freeway	Segment	Direction	Peak Hour	Mixed-Flow					HOV					Project Trips						
				Ave. Speed/lanes	# of Lanes	Capacity (vph)	Volume/lanes	Density	LOS	Ave. Speed/lanes	# of Lanes	Capacity (vph)	Volume/lanes	Density	LOS	Mixed-Flow		HOV %		
																Volume	Capacity			
US 101	McKee to Oakland	NB	AM	20	3	6900	5001	63.4	F	33	1	1800	1988	60.3	F	30	21	0.3%	8	0.5%
		PM	66	3	6900	5575	28.2	D	67	1	1800	875	13.1	B	40	35	0.5%	5	0.3%	
US 101	Oakland to I-880	NB	AM	13	3	6900	4072	104.4	F	36	1	1800	2026	56.3	F	18	12	0.2%	6	0.3%
		PM	66	3	6900	4182	21.1	C	67	1	1800	543	8.1	A	24	22	0.3%	3	0.2%	
US 101	I-880 to Old Bayshore	NB	AM	12	3	6900	3890	106.1	F	19	1	1800	1630	85.8	F	0	0	0.0%	0	0.0%
		PM	67	3	6900	3420	3.62	F	67	1	1800	540	8.1	A	0	0	0.0%	0	0.0%	
US 101	Old Bayshore to First	NB	AM	13	3	6900	4020	103.1	F	11	1	1800	1230	111.8	F	0	0	0.0%	0	0.0%
		PM	66	3	6900	4550	23.0	C	66	1	1800	1450	22.0	C	0	0	0.0%	0	0.0%	
US 101	First to Guadalupe	NB	AM	22	3	6900	5226	79.2	F	17	1	1800	1535	90.3	F	20	16	0.2%	5	0.3%
		PM	66	3	6900	5187	26.2	D	67	1	1800	473	7.1	A	40	37	0.5%	3	0.2%	
US 101	Guadalupe to Trimble	NB	AM	15	3	6900	4295	95.4	F	21	1	1800	1706	81.2	F	20	15	0.2%	6	0.3%
		PM	64	3	6900	6176	32.2	D	67	1	1800	744	11.1	B	40	36	0.5%	4	0.2%	
I-880	Coleman to SR 87	NB	AM	37	3	6900	6140	55.3	F	—	—	—	—	—	—	30	30	0.4%	—	—
		PM	59	3	6900	6590	37.2	D	—	—	—	—	—	—	—	40	40	0.6%	—	—
I-880	SR 87 to First	NB	AM	61	3	6900	6590	37.2	D	—	—	—	—	—	—	30	30	0.4%	—	—
		PM	59	3	6900	6590	37.2	D	—	—	—	—	—	—	—	40	40	0.6%	—	—
I-880	First to US 101	NB	AM	50	3	6900	6630	44.2	D	—	—	—	—	—	—	30	30	0.4%	—	—
		PM	61	3	6900	6630	36.2	D	—	—	—	—	—	—	—	40	40	0.6%	—	—
I-880	US 101 to Brokaw	NB	AM	35	3	6900	6135	58.4	F	—	—	—	—	—	—	45	45	0.7%	—	—
		PM	66	3	6900	5210	26.3	D	—	—	—	—	—	—	—	60	60	0.9%	—	—
I-880	Brokaw to Montague	NB	AM	65	3	6900	5695	29.2	D	—	—	—	—	—	—	35	35	0.5%	—	—
		PM	66	3	6900	5608	28.3	D	—	—	—	—	—	—	—	68	68	1.0%	—	—
I-880	Montague to Great Mall	NB	AM	66	3	6900	5560	28.1	D	—	—	—	—	—	—	20	20	0.3%	—	—
		PM	63	3	6900	6470	34.2	D	—	—	—	—	—	—	—	40	40	0.6%	—	—
I-880	Great Mall to Montague	SB	AM	66	3	6900	4580	23.1	C	—	—	—	—	—	—	30	30	0.4%	—	—
		PM	27	3	6900	5630	69.5	F	—	—	—	—	—	—	—	40	40	0.6%	—	—
I-880	Montague to Brokaw	SB	AM	66	3	6900	4801	24.2	D	—	—	—	—	—	—	51	51	0.7%	—	—
		PM	16	3	6900	4528	94.3	F	—	—	—	—	—	—	—	68	68	1.0%	—	—
I-880	Brokaw to US 101	SB	AM	66	3	6900	4980	25.2	D	—	—	—	—	—	—	30	30	0.4%	—	—
		PM	26	3	6900	5600	71.8	F	—	—	—	—	—	—	—	60	60	0.9%	—	—
I-880	US 101 to First	SB	AM	58	3	6900	6630	36.1	D	—	—	—	—	—	—	20	20	0.3%	—	—
		PM	8	3	6900	3110	129.6	F	—	—	—	—	—	—	—	40	40	0.6%	—	—
I-880	First to SR 87	SB	AM	55	3	6900	6620	40.1	D	—	—	—	—	—	—	20	20	0.3%	—	—
		PM	19	3	6900	4890	85.8	F	—	—	—	—	—	—	—	40	40	0.6%	—	—
I-880	SR 87 to Coleman	SB	AM	58	3	6900	6630	38.1	D	—	—	—	—	—	—	20	20	0.3%	—	—
		PM	26	3	6900	5580	71.5	F	—	—	—	—	—	—	—	40	40	0.6%	—	—
US 101	Trimble to Guadalupe	SB	AM	16	3	6900	4485	93.4	F	67	1	1800	945	14.1	B	30	25	0.4%	5	0.3%
		PM	21	3	6900	5129	81.4	F	64	1	1800	2062	32.2	D	40	28	0.4%	12	0.6%	
US 101	Guadalupe to First	SB	AM	67	3	6900	3646	18.1	C	67	1	1800	473	7.1	A	30	26	0.4%	3	0.2%
		PM	16	3	6900	4447	92.6	F	51	1	1800	2203	43.2	D	40	27	0.4%	13	0.7%	
US 101	First to Old Bayshore	SB	AM	67	3	6900	3220	16.0	C	67	1	1800	940	14.0	B	0	0	0.0%	0	0.0%
		PM	12	3	6900	3920	108.9	F	42	1	1800	2100	50.0	E	0	0	0.0%	0	0.0%	
US 101	Old Bayshore to I-880	SB	AM	67	3	6900	3220	16.0	C	67	1	1800	400	6.0	A	0	0	0.0%	0	0.0%
		PM	13	3	6900	4100	105.1	F	32	1	1800	1980	61.9	F	0	0	0.0%	0	0.0%	
US 101	I-880 to Oakland	SB	AM	66	3	6900	4561	23.0	F	67	1	1800	541	8.1	A	12	11	0.2%	1	0.1%
		PM	13	3	6900	4076	104.5	F	43	1	1800	2116	49.3	E	24	16	0.2%	8	0.5%	
US 101	Oakland to McKee	SB	AM	66	3	6900	4179	21.1	C	67	1	1800	402	6.0	A	20	19	0.3%	2	0.1%
		PM	28	3	6900	5660	67.4	F	65	1	1800	2031	31.2	D	40	30	0.4%	11	0.6%	

- Box indicates significant impact

/a/ Source: Santa Clara Valley Transportation Authority Congestion Management Program Monitoring Study, 2004.



## Other Operational Issues

With several of the study intersections along Brokaw Road in close proximity to other upstream or downstream intersections, many intersections currently have operational problems, such as long vehicle queues and turn-movement conflicts. It can be expected that the operational deficiencies will worsen with the addition of project traffic. Specifically, the I-880 interchange would likely continue to see operational problems due to large traffic demands. Operational deficiencies are not considered impacts under CEQA, but may require additional improvements as described below.

### *Intersection Queuing Analysis*

The operations analysis is based on the vehicle queuing for high-demand turning movements at intersections in the immediate vicinity of the project site. This analysis is useful in determining whether the existing turn pockets would provide adequate storage to accommodate estimated maximum vehicle queues at intersections. Turn-movements at intersections along Brokaw Road between I-880 and Oakland Road were included in the analysis. Additionally, trips associated with the potential Fox Site development located at Brokaw Road and Oakland Road were used to establish cumulative conditions for the operational queuing analysis. The Fox Site development is included for informational purposes as a worst case scenario in determining necessary operational improvements.

The results, shown in Table 4, indicate that five of the seven movements analyzed currently exceed the existing storage capacity. With the addition of project traffic, one additional movement would exceed existing storage capacities. Each of the operational deficiencies and recommended improvements is described below:

**Brokaw Road and Ridder Park Drive** – The projected maximum queue for the northbound left-turn lane on Ridder Park Drive (275 feet in the PM peak hour) under project conditions would exceed the existing storage capacity of 150 feet.

*Recommendation:* The signal currently operates as a 6-phase signal with no protected left-turn phases on the north-south approaches. Left-turn pockets should be added to the north-south approaches and the signal operations converted to 8-phases.

**Brokaw Road and Ridder Park Drive** – The projected maximum queue for the westbound left-turn lane on Brokaw Road (225 feet in the PM peak hour) under project conditions would exceed the existing storage capacity of 150 feet.

*Recommendation:* Extend the left-turn pocket the necessary 75 feet by removing the existing median and treatments. A second left-turn lane can also be added rather than extending the pocket.

**Brokaw Road and I-880 (West)** – The existing maximum queues for the southbound and westbound left-turn lanes at the intersection exceed the existing storage capacity. The storage deficiency is projected to remain deficient under NSJDP buildout and be worsened by project traffic.

*Recommendation:* Two left-turn lanes are currently provided for both movements. It is not possible to extend the pockets for either of the left-turn movements due to the close spacing of upstream intersections and off-ramp lengths. A complete reconstruction of the interchange would be required to serve projected traffic volumes. The NSJDP EIR projected poor conditions at the I-880/Borkaw Road interchange and recommended the extension of Charcot Avenue over I-880. The extension of Charcot Avenue will alleviate some of the projected demand and operational issues at the I-880/Brokaw interchange.

**Table 4**  
**Vehicle Queuing Analysis Summary**

Measurement	Ridder Park/ Brokaw NBL AM	Ridder Park/ Brokaw WBL AM	Ridder Park/ Brokaw WBL PM	Brokaw I-880 (W) SBL AM	Brokaw I-880 (W) SBL PM	Brokaw I-880 (W) WBL AM	Brokaw I-880 (W) WBL PM	Brokaw I-880 (E) NBR AM	Brokaw I-880 (E) NBR PM	Brokaw I-880 (E) WBL AM	Brokaw I-880 (E) WBL PM	Oakland/ Brokaw EBL AM	Oakland/ Brokaw EBL PM
<b>Existing Conditions</b>													
Cycle/Delay <sup>1</sup> (sec)	135	135	135	135	135	135	135	135	135	135	135	150	150
Lanes	1	1	1	2	2	2	2	1	1	1	1	2	2
Volume (vph)	59	83	15	168	421	957	669	623	404	165	105	252	307
Volume (vphpl)	59	83	15	84	210.5	478.5	349.5	623	404	165	105	126	153.5
Avg. Queue (veh/in.)	2.2	3.1	0.6	3.2	7.9	17.9	12.5	3.4	15.2	6.2	3.9	5.3	6.4
Avg. Queue <sup>2</sup> (ft./in.)	55	78	14	79	197	449	314	584	379	155	98	131	160
95th % Queue (veh/in.)	5	6	2	6	13	25	19	32	22	11	7	9	11
95th % Queue (ft./in.)	125	150	100	150	325	625	475	800	550	275	175	225	275
Storage (ft./in.)	Unl.	Unl.	150	175	175	250	250	400	400	115	115	200	200
Adequate (Y/N)	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
<b>NSJ Buildout Conditions</b>													
Cycle/Delay <sup>1</sup> (sec)	135	135	135	135	135	135	135	135	135	135	135	150	150
Lanes	1	1	1	2	2	2	2	1	1	1	1	2	2
Volume (vph)	138	169	37	227	417	831	699	673	499	182	212	236	246
Volume (vphpl)	138	169	37	113.5	208.5	415.5	349.5	673	499	182	212	119	123
Avg. Queue (veh/in.)	6.3	1.6	1.4	4.3	7.8	15.6	13.1	25.2	18.7	6.8	8.0	5.0	5.1
Avg. Queue <sup>2</sup> (ft./in.)	129	158	40	106	195	390	328	631	468	171	199	124	128
95th % Queue (veh/in.)	9	11	4	8	13	22	19	34	26	11	13	9	9
95th % Queue (ft./in.)	225	275	100	200	325	550	475	850	650	275	325	225	225
Storage (ft./in.)	Unl.	Unl.	150	175	175	250	250	400	400	115	115	200	200
Adequate (Y/N)	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
<b>Project Conditions</b>													
Cycle/Delay <sup>1</sup> (sec)	135	135	135	135	135	135	135	135	135	135	135	150	150
Lanes	1	1	1	2	2	2	2	1	1	1	1	2	2
Volume (vph)	174	86	131	185	477	849	682	638	550	195	189	247	228
Volume (vphpl)	174	86	131	92.5	238.5	424.5	341	638	550	195	189	123.5	114
Avg. Queue (veh/in.)	6.5	3.2	0.0	3.5	8.9	15.9	12.8	23.9	20.6	7.3	7.1	5.1	4.8
Avg. Queue <sup>2</sup> (ft./in.)	163	81	0	87	224	398	320	598	516	183	177	129	119
95th % Queue (veh/in.)	11	6	9	7	14	23	19	32	28	12	12	9	9
95th % Queue (ft./in.)	275	150	4275	175	350	575	475	800	700	300	300	225	225
Storage (ft./in.)	Unl.	Unl.	150	175	175	250	250	400	400	115	115	200	200
Adequate (Y/N)	YES	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
<b>Cumulative Conditions</b>													
Cycle/Delay <sup>1</sup> (sec)	135	135	135	135	135	135	135	135	135	135	135	150	150
Lanes	1	1	1	2	2	2	2	1	1	1	1	2	2
Volume (vph)	174	86	131	185	542	870	625	575	589	241	138	236	188
Volume (vphpl)	174	86	131	94	271	435	312.5	575	589	241	138	118	94.5
Avg. Queue (veh/in.)	6.5	3.2	0.0	3.4	10.2	16.3	11.7	21.6	22.1	9.0	5.2	4.9	3.9
Avg. Queue <sup>2</sup> (ft./in.)	163	81	0	60	254	408	293	538	552	226	129	123	98
95th % Queue (veh/in.)	11	6	9	5	16	23	18	29	30	14	9	9	7
95th % Queue (ft./in.)	275	150	4275	125	400	575	450	725	750	350	225	225	175
Storage (ft./in.)	Unl.	Unl.	150	175	175	250	250	400	400	115	115	200	200
Adequate (Y/N)	YES	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES

<sup>1</sup> Vehicle queue calculations based on cycle length for signalized intersections, and movement delay for unsignalized intersections.

<sup>2</sup> Assumes 25 Feet Per Vehicle Queued



**Brokaw Road and I-880 (East)** – The existing maximum queue for the northbound right-turn lane on the I-880 off-ramp (800 feet in the AM peak hour) exceeds the existing storage capacity of 400 feet. The storage deficiency is projected to remain deficient under NSJDP buildout conditions and project conditions.

*Recommendation:* Convert one of the two existing left-turn lanes to a shared left and right-turn lane. An alternative would be to modify the signal operations to provide a green-arrow for the northbound right-turn movement to create a free-running right-turn except when the pedestrian phase is activated.

**Brokaw Road and I-880 (East)** – The existing maximum queue for the westbound left-turn lane on Brokaw Road (275 feet in the PM peak hour) exceeds the existing storage capacity of 115 feet. The storage deficiency is projected to remain deficient under NSJDP buildout conditions. Under project conditions, the project would extend the queue length to 300 feet.

*Recommendation:* It is possible to extend the left-turn pocket a maximum of 125 feet by removing the existing median due to inadequate space on Brokaw Road. The extension of the pocket would create an approximately 250-foot left-turn pocket, but would continue to be inadequate to serve projected demand.

### **Site Access and On-Site Circulation**

Based on the proposed site plan shown in Figure 9, two driveways are proposed along Ridder Park Drive, west of Schallenberger Road, to serve the project site. Both driveways will provide access to all areas of the site. City staff requested that site access analysis include the evaluation of a possible full-access signalized entrance at the existing Ridder Park Drive and Schallenberger Road intersection rather than the two driveways proposed. The site access analysis includes an evaluation of signal warrants, intersection LOS, vehicular queues, and sight distance at the intersection of Ridder Park Drive and Schallenberger Road for both access alternatives. Results for both access alternatives are summarized in Table 5.

#### **No Schallenberger Main Entrance**

The proposed dual-driveways plan (No Schallenberger Main Entrance) will provide full access to Ridder Park Drive from both driveways. Traffic volumes at the driveways and intersection of Ridder Park Schallenberger are shown on Figure 10. Signal warrant checks of the driveways indicate that neither driveway will meet peak hour signal warrants.

Under the dual-driveway plan, the intersection of Ridder Park/Schallenberger would remain unchanged with the exception of allowing access to delivery trucks. Signal warrant checks showed that the intersection would not warrant a traffic signal under project conditions. The unsignalized intersection is projected to operate at LOS C during both peak hours. Maximum vehicle queues for the left-turn movements at the intersection would not exceed two vehicles (50 feet). A minimum of 275 feet of sight distance is required for a roadway with travel speeds of 35 mph based on the *Caltrans Traffic Manual*. A minimum of 275 feet of sight distance is provided at the intersection for the left-turn movements, therefore adequate sight distance is provided.

#### **With Schallenberger Main Entrance**

The City preferred access alternative would provide access to the site via one main signalized entrance at the intersection of Ridder Park Drive and Schallenberger Road. Traffic volumes with the Schallenberger main entrance are shown on Figure 11. The signal warrant analysis showed that the intersection would warrant a traffic signal under project conditions with it serving as the main entrance to the site. With signalization, the intersection would operate at LOS C or better during both peak hours under project conditions. Maximum vehicle queues for the left-turn movements at the intersection would not exceed four vehicles (100 feet).

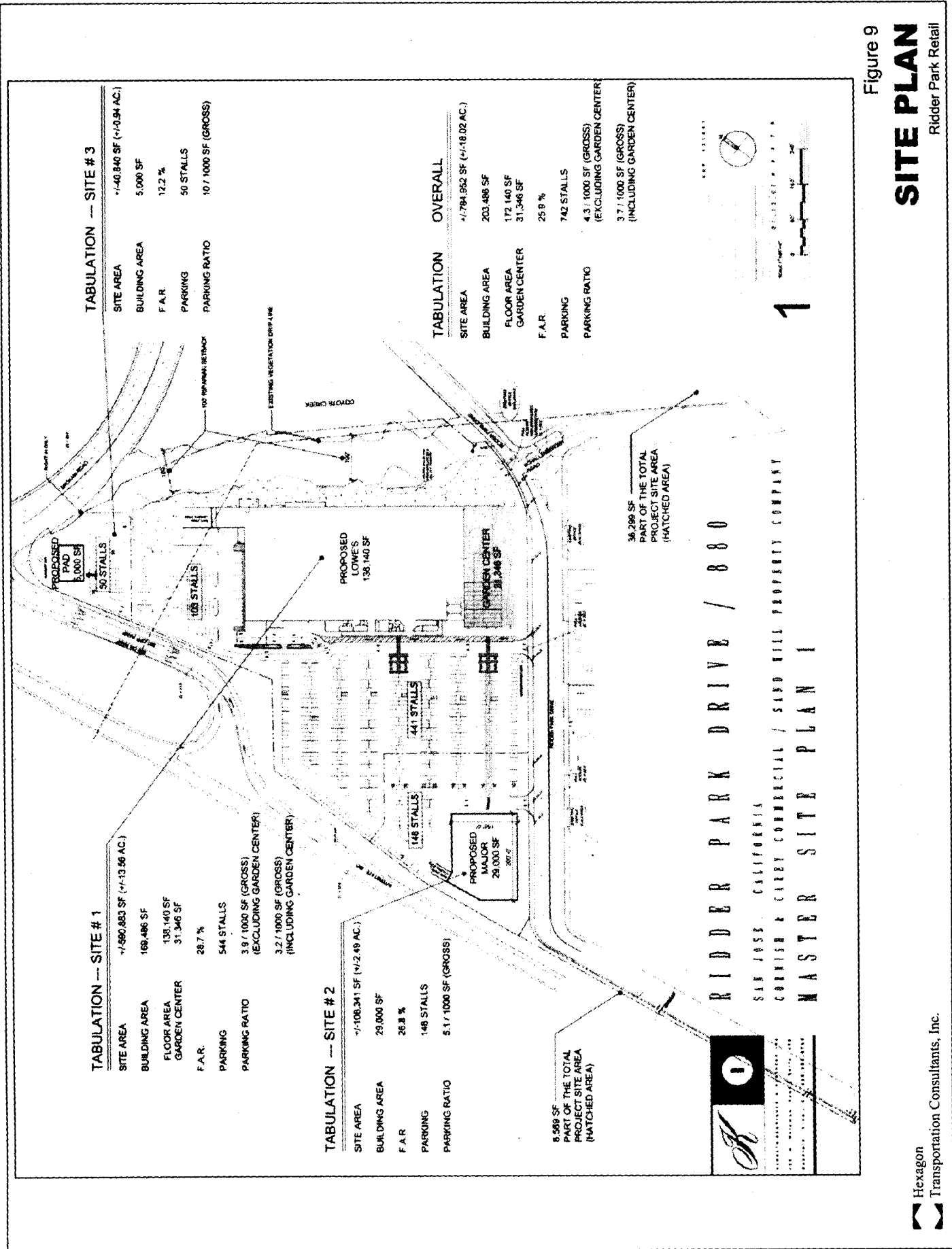


Table 5

## Ridder Park Drive and Schallenberger Drive Access Analysis Summary

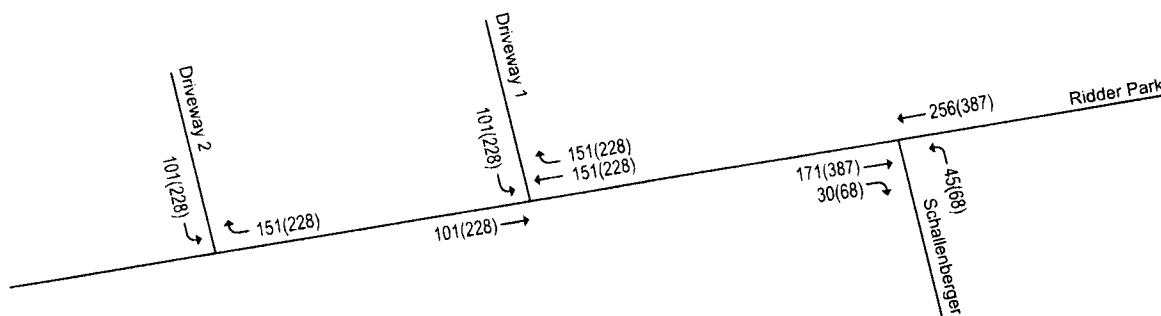
Peak Hour	Signal Warrant Analysis <sup>1</sup> Warrant Met?	Intersection LOS Analysis <sup>2</sup>		Vehicular Queue Analysis <sup>3</sup>				Sight Distance Analysis <sup>5</sup>	
		Ave. Delay	LOS	Westbound LT Vehicles	Length (ft.) <sup>4</sup>	Southbound LT Vehicles	Length (ft.) <sup>4</sup>	Westbound LT Length (ft.)	Southbound LT Length (ft.)
Without Schallenberger Main Entrance	AM	No	C	2	50	1	25	350	275
	PM	No	C	2	50	1	25	350	275
With Schallenberger Main Entrance	AM	No	B	3	75	4	100	N/A	N/A
	PM	Yes	C	1	25	6	75	N/A	N/A

## Notes:

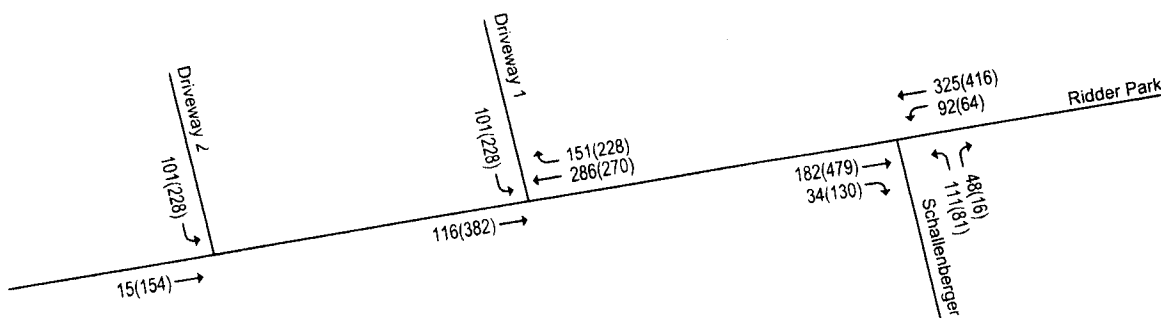
<sup>1</sup> Signal warrant based on 2003 MUTCD Peak Hour Volume Warrant (under 40 mph)<sup>2</sup> Worst case delay for unsignalized and average control delay for signalized intersections based on HCM 2000 Operations Method using TRAFFIX software<sup>3</sup> Vehicle queue calculations based on cycle length for signalized operations and movement delay for unsignalized operations<sup>4</sup> Assumes 25 Feet Per Vehicle Queued<sup>5</sup> Required sight distance for 35 mph roadway is 275 ft. based on Caltrans Traffic Manual



## Project Trips



## Project Conditions

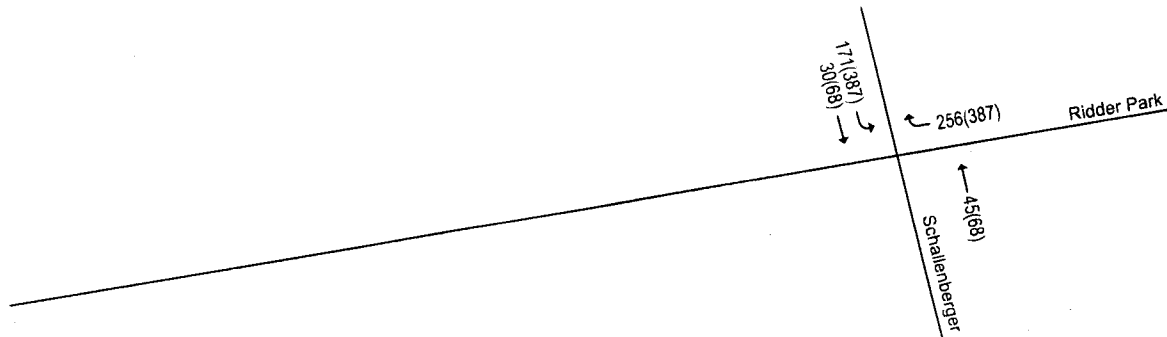


### Legend

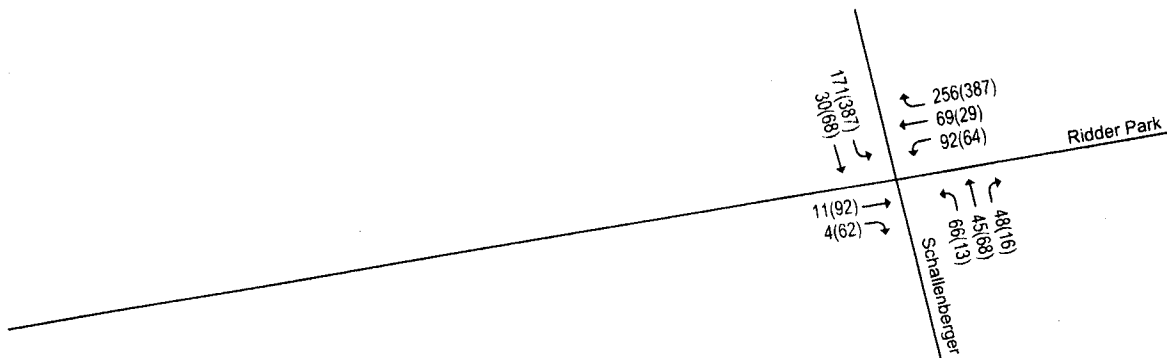
XX(XX) = AM(PM) Peak-Hour Traffic Volumes



## Project Trips



## Project Conditions



### Legend

XX(X) = AM(PM) Peak-Hour Traffic Volumes

Figure 11

**WITH SIGNALIZED SCHALLENBERGER  
MAIN ENTRANCE**

Ridder Park Retail





### On-Site Circulation

The proposed site plan, which includes the dual-driveways with no vehicular access at Schallenberger Road, shows an approximately 26-foot-wide main drive aisle along the Lowe's store frontage. Drive aisles within the parking lot that run between the main drive aisle and second driveway access are also approximately 26 feet wide. The drive aisles are adequate to serve two-way access to the 90-degree parking stalls.

### Truck Traffic

Access for delivery trucks is proposed to be taken from Ridder Park Drive at Schallenberger Road. The access would be restricted to delivery trucks for Lowe's and would not provide passenger car access to the parking areas. The new leg of the Ridder Park/Schallenberger truck entrance would need to be stop-controlled and signed to restrict non-truck access. Trucks would exit the Lowe's delivery area via a right-turn only exit driveway along Brokaw Road. Truck access for the out-parcel retail pads would be taken from one of the two driveways along Ridder Park Drive.

## Conclusions and Recommendations

Analysis results indicate that the adjustment of land uses assumed for the project site as part of the NSJDP to reflect the proposed project will not result in any additional impacts to signalized intersections or freeway segments beyond those identified as part of the completed and approved NSJDP EIR.

Though no additional impacts were identified due to the proposed adjustment of NSJDP assumed land uses for the site, the project will likely have to contribute to the NSJDP impact fee program.

Estimated NSJDP Impact Fees: \$1,635,772

Operations analysis consisting of an evaluation of projected vehicle queues for high-demand turn-movements revealed that the projected vehicle queues would exceed existing storage capacities of several turn pockets. Recommended improvements are as follows:

**Brokaw Road and Ridder Park Drive** – Extend the westbound left-turn pocket 75 feet by removing the existing median and treatments. A second left-turn lane can also be added rather than extending the pocket.

**Brokaw Road and Ridder Park Drive** – Modify the current 6-phase signal operations with no protected left-turn phases on the north-south approaches to include left-turn pockets and 8-phase signal operations on the north-south approaches.

**Brokaw Road and I-880 (East)** – Convert one of the two existing northbound left-turn lanes to a shared left and right-turn lane. An alternative would be to modify the signal operations to provide a green-arrow for the northbound right-turn movement to create a free-running right-turn except when the pedestrian phase is activated.

**Brokaw Road and I-880 (East)** – Extend the westbound left-turn pocket 125 feet by removing the existing median. The extension of the pocket would create an approximately 250-foot left-turn pocket, but would continue to be inadequate to serve projected demand.

An evaluation of site access and on-site circulation showed that the signalization of the intersection of Ridder Park Drive and Schallenberger Road will not be necessary if the intersection does not serve as the main access point to the project site.